ABSTRACT

A ballast protecting device is connected between an AC input voltage and a ballasted lamp. The device includes a voltage sensing block, a current sensing block, a pulse forming block, a switch block, and a micro-controller unit (MCU). The pulse forming block converts positive half cycles of the voltage and current provided by the voltage and current sensing blocks to square wave pulses, and the MCU performs a phase angle comparison between generated pulses. Upon lamp malfunction, ballast current is phase shifted. Current may also be phase shifted when there is a radical change in the input voltage. As a trend of the phase shift between current and voltage is determined by the MCU, a ballast disconnect decision is made, and the MCU actuates the switch block to disconnect the connected ballast and malfunctioning lamp.